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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/046,426	01/16/2002	Alexander Gurary	EMCORE 3.0-069	2965

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EXAMINER	
MOORE, KARLA A	

ART UNIT	PAPER NUMBER
1763	

DATE MAILED: 08/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/046,426	GURARY ET AL.	
	Examiner	Art Unit	
	Karla Moore	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 June 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10 and 12-32* is/are pending in the application.

4a) Of the above claim(s) *25-32* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-10,12-19 and 24* is/are rejected.

7)☒ Claim(s) *5 and 20-23* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 April 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-4, 6-10, 12-19 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,111,225 to Ohkase et al. in view of U.S. Patent Publication No. 2002/0068870 A1 to Noorbakhsh et al and U.S. Patent No. 3,564,454 to Schrader.

3. Ohkase et al. disclose a reactor for deposition substantially as claimed in Figure 2, comprising: a reaction chamber (4) including a passthrough opening (adjacent G1) capable of inserting and removing wafer carriers from said reaction chamber; a completely surrounding cylindrical shutter (50) located inside said reaction chamber for selectively closing said passthrough opening and a second position for opening said passthrough opening (column 6, rows 20-27).

4. However, Ohkase et al. fail to teach said cylindrical shutter includes an internal cavity, wherein the internal cavity of said cylindrical shutter completely surrounds said at least one of said wafer carriers secured within said reaction chamber.

4. Noorbakhsh et al. teach the use of a liner (104) with an internal cavity (322) of the liner completely surrounding a wafer (see Figures 2A and 2B; also see paragraph 40) for the purpose of providing a thermally controlled chamber liner capable of reducing stress formation in films deposited on the liner and thus increasing service life of the liner while minimizing film fracture and the associated particulate generation (paragraphs 16 and 63).

5. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an internal cavity surrounding a wafer in order to provide a thermally controlled chamber liner capable of reducing stress formation in films deposited on the liner and thus

increasing service life of the liner while minimizing film fracture and the associated particulate generation as taught by Noorbakhsh et al.

6. With respect to the configuration of the internal cavity of the liner in Noorbakhsh et al., Examiner recognizes that in the examples shown the internal cavity does not "completely" surround the liner, but very nearly. At paragraph 40, Noorbakhsh et al. teach that those of ordinary skill in the art can devise alternate configurations. Further, the courts have ruled that where the general conditions of a claim are disclosed in the prior art; it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). One of ordinary skill in the art would have recognized that the more of the circumference that contains a temperature controlling passage, the more accurately temperature can be controlled.

7. Ohkase et al. and Noorbakhsh et al. disclose the invention substantially as claimed and as described above.

8. However, Ohkase et al. and Noorbakhsh et al. fail to teach the use of at least one of said wafer carriers being secured within said reaction chamber, wherein said cylindrical shutter completely surrounds said at least one of said wafer carriers secured within said reaction chamber and further comprising a rotatable spindle (as recited in claim 13) having an upper end located inside said reaction chamber, wherein at least one of said wafer carriers is secured to the upper end of the spindle.

9. Schrader teaches the use of a wafer carrier (Figures 1 and 2, 13; column 2, row 64 through column 3, row 30) for the purpose supporting substrates during a coating process. The wafer carrier is secured to a spindle (96) for the purpose of rotating the wafers/carrier during the coating process to aid in uniform coating thickness and quality. The wafer carrier has an outer perimeter that would be surrounded by the cylindrical liner (as recited in claim 14).

10. With respect to the orientation of the of the wafer carrier on the spindle (claim 13), Examiner recognizes that in Schrader the vertical orientation is reversed. However, it is well known in the art that wafers can be successfully processed right side up or upside down and to reverse this orientation would have been obvious to one of ordinary skill in the art.

11. Further the courts have ruled that mere rearrangement of parts has no patentable significance unless a new and unexpected result is produced. In re Harza, 274 F. 2d 669, 124 USPQ 378 (CCPA 1960).

12. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a wafer carrier in Ohkase et al. and Noorbakhsh et al. in order to support wafers during a coating process and to have provided a spindle in Ohkase et al. and Noorbakhsh et al. for rotatively supporting the wafer carrier in order to aid in uniform coating and thickness and quality as taught by Schrader.

13. With respect to claims 2 and 12, said reactor further comprises tubing (Figure 3, 334) connected with said internal cavity of said shutter for supplying said cooling fluid to said internal cavity.

14. With respect to claim 3, said tubing includes at least one inlet tube for introducing said cooling fluid into said internal cavity and at least one outlet tube from removing said cooling fluid from said internal cavity (paragraphs 31 and 40).

15. With respect to claim 4, said tubing may include more than one inlet tube and more than one outlet tube (paragraphs 31 and 40).

16. With respect to claim 6, the liner of the reactor in Noorbakhsh et al. comprises stainless steel or another metal compatible with the process being carried out in the reactor (paragraph 56).

17. With respect to claims 7 and 15, said reactor further comprises an injection flange (Figure 2, 28) for introducing reactants inside said reaction chamber.

18. With respect to claim 8, Chiang et al. further disclose the invention substantially as claimed and as described above, including one or more heating elements (Figure 2, 16) provided in communication with said reaction chamber.

19. With respect to claim 9, Chiang et al. further disclose a heat shield (Figure 2, 6A) for directing heat.

20. With respect to claim 10, said cylindrical shutter is "substantially" hollow to the extent that an internal cavity is provided with a volume which is capable of achieving a specific temperature of the shutter by providing a cooling fluid in the internal cavity.

21. Additionally with respect to claim 15, said reactor comprises a base plate (Figure 13, 112; paragraph 96).

22. With respect to Figure 16, said base plate of Noorbakhsh et al. has openings for said tubing and said tubing extends through said opening (see Figure 1).

23. With respect to claim 17, said tubing has an upper end connected with said shutter (see Figure 1). Different portions of the tubing are connected at the top or the bottom.

24. With respect to Figure 18, said tubing has a lower end located outside said reaction chamber and in fluid communication with a reservoir (121) of said cooling fluid (see Figure 1).

25. With respect to claim 19, the courts have ruled that expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. Ex parte Thibault,164 USPQ 666, 667 (Bd. App. 1969).

26. With respect to claim 24, said reaction chamber is substantially cylindrical (Ohkase-column 4, rows 6-10).

Allowable Subject Matter

27. Claims 5 and 20-23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

28. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record fails to teach or fairly suggest that the tubing is connected with said shutter for moving simultaneously with said shutter when said shutter moves between said first and second shutter positions; nor does the prior art of record teach or fairly suggest the lower end of said tubing is connected to a movable plate. Additionally, no other piece of prior art possessing the aforementioned features was located that provided motivation for combination.

Response to Arguments

29. Applicant's declarations under 1.131 regarding invention and reduction to practice prior to Chiang and Tung have been entered. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Ohkase and Noorbakhsh.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 571.272.1440. The examiner can normally be reached on Monday-Friday, 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 571.272.1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

km
18 August 2004

P. Hassanzadeh

Parviz Hassanzadeh
Primary Examiner
Art Unit 1763